



*Original Research Article*

# **In-service teacher professional development: The pathway to ICT integration in teaching and learning; The case of a school in Nairobi Kenya**

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Abstract

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Some basic education teachers hold the view that there are many old, tried and tested pedagogic skills that are successful. This is justifiable where basic education learners have successfully undertaken and passed national examinations having been through the hands of such teachers. However, the use of modern Information and Communication Technology (ICT) tools is proving to be a “game changer” in many sectors of the economy, education included. Educational technology has been in place for many years; however, the use of modern ICT tools has the ability to make the learning environment more learner centered as opposed to being teacher centered. The role of the teacher is changing from being the sole source of information in a classroom to a facilitator, organizer and a guide who helps learners to get the right information among many sources available. Frequent up-date of the skill set of a teacher in the modern world is what improves the confidence of a teacher towards abandoning old pedagogic skills for new ones that can improve the teaching and learning environment. This paper looks at in-service training as a platform towards development and acquisition of new pedagogies that accommodate the use of modern ICT tools in the classroom. Integration of ICT in teaching and learning environments can bring about demystification of complex ideas in different subject areas as well as the creation of a learner-centered environment in and outside the classroom. Seasoned teachers at all levels of education may find it hard to abandon old teaching styles but according to John Dewey “if we teach the learner of today the same way we were taught, we deny them their tomorrow”. In any education system the existing number of teachers will always exceed the one of the new in-coming teachers. The new teachers – even when they possess new pedagogic approaches that allow ICT integration – fall into the existing systems and ways of teaching very fast and may not have the desired effect in changing the status quo. Training those in service thus becomes a necessity if the entire teaching force is expected to integrate modern ICT tools in teaching and learning. A case study was used to come up with descriptive statistics from a questionnaire that was given to a purposively selected sample due to the nature of the Teacher Professional Development (TPD) that was employed for that population. This study found that TPD can ensure that teachers take change willingly, and confidently employ new skills they learn in their teaching. The study recommends frequent and scheduled TPD courses – that can be evaluated – for all in-service teachers particularly on contemporary issues such as use of modern ICT tools in teaching and learning environments.

**Keywords:** ICT, Teaching and learning, Teacher professional development.

## **INTRODUCTION**

Teacher Professional Development (TPD) has many other names such as in-service training, human resource

development, on-the-job training and work related training. The aim of training people on-the-job is to

enhance their knowledge and skills so as to update the most new upcoming tools of their trade and emerging industry standards. Avalos (2011) defines TPD as teachers learning how to learn and transforming their knowledge into practice for the benefit of their learners' growth. TPD ensures that teachers keep up with changes and become familiar with new methods of teaching which incorporate the latest information on available teaching resources in different fields of specialization (Rodrigues, 2005). TPD should help teachers to expand their knowledge and skills to implement the best educational practices (Mizell, 2010). The specific focus of a TPD course must be clear in order to provide clear opportunities for the teachers being trained. TPD has an impact only if it is focused on specific changes in teaching (UNESCO 2011). The training should be in relation to the needs and requirements of teachers and schools, taking into consideration emerging trends and concerns in education (Kotreshwaraswamy, 2012).

On many occasions once given the initial training teachers are employed and left to gain experience in teaching without any additional formal learning for an indefinite period of time. It is thus natural to think about teaching in terms of performance in front of the class (Reeves 2011). However, it is important for teachers to stop and reflect on their learners and the learning environment teachers create whenever they are in the classroom. This is because what goes on in the mind of the learners is important to the teachers' achievements. It is a great benefit when a teacher is frequently prompted on how people learn through his or her own experience in learning, particularly where this can be done in teams and with colleagues. Professional development is what opens the minds of professionals to new ways of doing things and using new tools that can make work easier. TPD according to Lawless and Pellegrino (2007) ensures that teachers keep up with the changes and become familiar with new methods of teaching in their respective content areas. In the United States of America, as seen by Lawless and Pellegrino (2007) federal legislation and funding initiatives have focused on the provision of professional development for in-service teachers as a vehicle for changing teacher practice and improving students achievement.

When an organization decides to have professional development for staff there is usually an objective at hand or there is a particular issue that is being addressed by that training. In this case study, the school wanted to make the learners more involved in their learning so that they eventually own the learning processes. There was a need to reduce learners' teacher dependence and increase their independence in the teaching and learning environments that are essentially created by teachers. To ensure that the training bore the expected results, all teachers in the school were allocated training time that was officially put on the school time table. Each teacher would therefore attend a professional development class

the same way he or she went to the class to teach at a specified time. Mizell (2010) concluded that the most effective TPD engages teachers in teams to focus on the needs of their students. In this case study teachers were in two groups and their trainers were out-sourced from a TPD consultancy firm. Outside the training sessions the teacher had two mentors; a peer mentor who was referred to as a "critical friend" and an external professional mentor. Both attended a lesson in which the teacher would implement what he or she had learnt and there after receive feedback on what went well and what he or she could improve on as he or she worked towards the next lesson. Learners in the school inevitably enjoyed the experience as their teachers tried out new ways of delivering their lessons so as to achieve their objectives. The use of coaching, mentoring and peer-networking mechanisms to enhance teacher professional development and performance in schools is advocated (Rhodes and Beneicke, 2002).

In-service training is effective in improving perception of those being trained (Jahangir, Saheen and Kazmi, 2012). The attitude of those undertaking TPD is vital because it determines what happens after the training. The wrong attitude usually leads to wastage of resources because the teacher does not perpetuate the benefits of the training to fellow teachers or learners. The right attitude opens up the horizons of pedagogical practices and can lead to renewal of the teacher as well as have an undulate effect on all those who relate with him or her such as colleagues and learners. Effective professional development depends on how carefully educators conceive, plan and implement it (Mizell, 2010) because this is what ensures that the training is embraced positively and there is no wastage of resources.

Attempts to integrate ICT into the classroom are influenced by; availability of the necessary technology, infrastructure, support for teachers, accessible change models and TPD (Vrasidas and Gene, 2007). TPD creates an awareness on change among teachers and makes them agreeable to taking up new ideas to improve teaching and learning. It comes with the intention of moving people from their comfort zone of operation towards another way of teaching the same content or revised content in a subject area. According to Lawless & Pellegrino (2007), the integration of technology into teaching and learning is not a simple matter because there are many ways in which that integration can occur some more productive than others. Couros (2015) put it that there is a clear need for innovation in education and if we don't really think about the way we teach and more importantly how both educators and students learn we will all miss out on the opportunities that lie in front of us in the form of ICT. The situation that he describes can be dealt with through TPD that is geared towards the use of ICT in the classrooms of both young and old learners.

TPD according to Avalos (2011) it is a complex process that requires cognitive and emotional

involvement of teachers individually and collectively, the capacity and willingness to examine where each stands in terms of convictions and beliefs towards improvement and or change. National policy makers, community leaders and parents have the responsibility of ensuring that teachers within their schools engage in continuous professional learning and apply that learning to increase student achievement (Mizell, 2010). It is a collective effort with all the stakeholders playing their different roles. The government through its agents is usually expected to initiate TPD for its public schools while other stakeholders may initiate the process in the private sector.

### Statement of the problem

Teachers hardly discuss how their teaching is going on amongst themselves. Many misunderstandings exist about TPD, its purpose and how it functions (Mizell, 2010). However, TPD provides an opportunity for a teacher to stop and look back at the way he or she teaches. This kind of reflection is necessary for growth towards new and more improved pedagogical methods. TPD allows the teacher to re-assess the tools available versus the tools that he or she has been using over a period of time. In Kenya the Teachers Service Commission (TSC) Act of 2012, section 35 (2) (a) requires teachers to undergo TPD. However, since the year 2012 not all Kenyan teachers have been trained as stated in the Act thus making the state of TPD worrying. This paper sought to find out whether TPD is the main way in which teachers will embrace new teaching tools especially ICT tools and integrate them in the teaching and learning environments.

### METHODOLOGY

A case study method was used in this research to investigate and report on the data that was collected after training had been implemented in one particular school purposefully selected due to the nature of the TPD that it offered. The school had seventy (70) teachers all of whom went through the TPD training and thus became the target population for this case study. Simple random sampling was used to get the sample population of thirty (30) teachers and that made the sample population 42.86% of the target population. This is above the recommended minimum sample of 10% by researchers such as Kothari (2010). The researchers got secondary data from the TPD consultancy firm that was involved in the training of the teachers. A questionnaire and an observation schedule were used to collect data. The instruments were tested for reliability and the alpha correlation coefficient of 0.87 was obtained. The instruments were also tested for content, construct and criterion validity. Data was collected and analyzed using

descriptive analysis such as frequencies and percentages. Reporting was done using figures and tables.

## DISCUSSION OF THE FINDINGS

### Demographic data

The basic education teachers who responded to the questionnaire were a mixture of primary and secondary school teachers in the 8-4-4 system of education in Kenya. The school under investigation had learners from both sections and the teacher distribution was as shown in Figure 1.

The entire school is two streams making the primary section of the school larger and with more teachers. A majority 67% of the teachers in this study were primary school teachers while 33% were secondary school teachers. This compares well considering that the primary school has sixteen classrooms while the secondary school has eight classrooms.

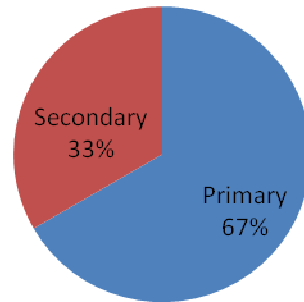
In the questionnaire teachers were also asked to give their teaching experience and Figure 2 shows the spread of their teaching experience.

It stood out that half (N=15, 50%) of the teacher participants in this study had taught for 6-10 years. These teachers are at their prime having gained sizeable experience in the teaching profession. They are also the best to train because as Mizell (2010) put it; even experienced teachers confront challenges. Such challenges may come as a result of changes in subject content, new instructional methods, advances in technology, changed laws and procedures as well as new student learning needs. The years of teaching experience for these teachers confirm that they are still open to new ideas that would enhance their professional work. This study therefore found that the training was timely for more than half the population of the teachers.

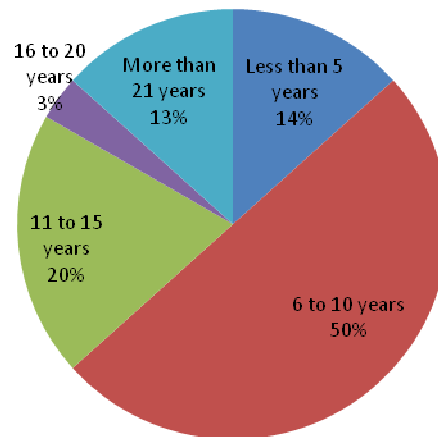
### Teachers' attitude towards professional development

In order to establish the attitude of the teachers who undertook the training, the researchers asked several questions. Some of the questions were targeting the attitude at the beginning of the training while other sought to find out the attitude during and after the training. Table 1 shows how the teacher participants reacted:

The initial attitude of a majority (N=17, 60%) of the teachers was negative. Reeves (2011) held that a teacher whose official success is measured in terms of students' high test scores and the satisfaction of students, parents and administrators may feel that there is no need to engage in deep design if current planning practices get good results. The school under study is a well performing school and the teachers were justified to



**Figure 1.** Secondary and Primary school teachers' proportion.



**Figure 2.** Teaching experience in years.

**Table 1.** A summary of attitude related statements and responses.

Statement	Strongly agree	Agree	Disagree	Strongly disagree
My initial attitude towards the in-service training was negative	10.0%	50.0%	20.0%	20.0%
I enjoyed the content taught in the course	73.3%	20.0%	3.3%	3.3%
In-service training can help a good teacher to be a better teacher	90.0%	10.0%	0.0%	0.0%
The material covered was relevant and timely towards improving my teaching	56.7%	43.3%	0.0%	0.0%
I do not mind the change in the schemes of work preparation	30.0%	46.7%	6.7%	16.7%

wonder why they were being re-trained. The teachers may have felt that this was an addition to their already busy time table. Time tabling the professional development had an effect on the time available for lesson preparation and marking of student's books and projects. However, after starting the training the teachers (N=28, 93.3%) said that they enjoyed the content of the course and all (N=30, 100%) of them crowned it by saying that in-service training can make a good teacher better. This is interpreted to mean that with time the teachers adjusted and the initial attitude changed from negative to positive as the training progressed.

The last statement in the table above was brought

about by a change that was effected in the preparation of schemes of work as a result of the training. The change according to the secondary data meant that teachers were going to take more time in the preparation of schemes of work as they reflected more on the students' needs as opposed to teacher activities. This agrees with Rodrigues (2005) when he said that TPD leads to development of new pedagogic methodologies that are student centered. This shows the attitude of the teachers after the training where a majority (N=17, 76.7%) did not mind the change that was made in a crucial professional document that they needed to prepare. This is positive attitude meant that teachers understood the basis of such

**Table 2.** A summary of effects of training on teaching and learning.

Statement	Strongly agree	Agree	Disagree	Strongly disagree
My students enjoy my class more than they did before the training	73.3%	26.7%	0.0%	0.0%
The course has made my work feel lighter or easier in class	36.7%	43.3%	16.7%	3.3%
I have changed my teaching methodology because of this course	70.0%	23.3%	3.3%	3.3%
My students get better marks due to new evaluation strategies	26.7%	60.0%	10.0%	3.3%
My students have owned their learning as a result of this course	56.7%	36.7%	6.6%	0.0%
The training has helped me to cover the syllabus faster	40.0%	36.7%	6.7%	16.7%

**Table 3.** Effect of in-service training on the use of ICT in the classroom.

Statement	Strongly agree	Agree	Disagree	Strongly disagree
The course helped me integrate modern ICTs in my teaching	40.0%	53.3%	3.3%	3.3%
I have already fallen back to the old way of teaching	0.0%	10.0%	46.7%	40.0%
The course has made me a more reflective teacher	73.3%	20.0%	3.3%	3.3%

a change and willingly tried out a new thing to better their performance. The approach used to explain concepts in professional development must be in tandem with adult learning strategies for them to be acceptable such as this one.

### Effect of professional development on teaching and learning

Table 2 summarizes the part of the questionnaire that sought the effects of the training on the teaching and learning environment as a result of the professional development course that was undertaken.

All (N=30, 100%) the teachers who participated in this study said that learners seem to enjoy their lessons more. Although this is a difficult to measure behavior, the teacher's mentor reports from the secondary data indicated the same. At the same time a majority (N=24, 80%) of the teachers also felt that the course has made their work lighter in class. Both of these observations were as a result of practicing what the teachers were learning during their scheduled professional development lessons. What teachers learn during professional development should affect their practice (Guskey, 2000) and in this case a majority (N=26, 86.7%) of the teachers attested that the course was sufficient to have a change in their teaching methodology.

Evaluation of the course through this study was done several months after the course was done and teachers had gone back to their normal teaching time tables. The great majority (N=26, 86.7%) of the teachers said that the course had an effect on the grades the students got after assessment. This is in sync with what Guskey (2000) meant when he said that the ultimate goal of TPD is its

impact on student learning because many a times its evaluation has been criticized for not offering evidence of impact on student learning. In this case there is evidence as provided by the data from the teachers. The researchers are of the opinion that these teachers practiced what they learnt and it bore the desired fruits. Enabling the learners own their learning was a very important objective of the course that the teachers were undertaking. Another great majority (N=28, 93.3%) of the teachers confirmed that this objective was achieved in their own opinion. Inevitably therefore once the learners owned their learning, the syllabus was covered much faster as both teachers and learners were recharged in their teaching and learning environment respectively.

### Effect of teacher professional development on use of ICT in teaching and learning

In order to check whether the teacher professional development had an effect on the use of ICT in teaching and learning, the researchers asked the participating teachers a number of questions in the questionnaire. Table 3 shows how the teachers responded to three such questions.

The participant teachers in this study (N=28, 93.3%) agreed that the course offered had helped them integrate modern ICT tools in teaching. According to UNESCO (2011), the teaching skills of the future will include the ability to develop innovative ways of using technology to enhance the learning environment to encourage knowledge creation. This course therefore moved the teachers involved a step in the right direction.

Teacher reflection is an instrument of change as it requires analysis of needs, problems, change of

processes and feelings of efficacy (Avalos 2011). The training given therefore must enhance reflection in all these areas. The participant teachers in this study (N=28, 93.3%) affirmed that the course made them more reflective in their teaching; meaning that they are able to anticipate the needs and problems of their learners and they can change their teaching to address them as they arise during teaching.

### Challenges experienced during the training

Teachers are very diverse individuals and each settles on his or her own style of teaching. Avalos (2011) says that not every professional development course – even those with the greatest impact – is of itself relevant to all teachers. The training was taking part during the teaching time in the school and did not take into consideration that many teachers are usually not free at any one moment of the time they are in school. This training time therefore strained the time that the teachers were supposed to prepare their lessons and mark class exercises. A majority of the teachers trained pointed out that time was a real challenge to attending to the training and all the assignments and projects that were given had to be done. The teacher became a student and had homework to do just like his own learners and this was during the normal school term.

TPD has everything to do with adult learning and in adult learning everyone's logic is valid. Not all members of staff are likely to be receptive as learners (Rhodes and Beneicke, 2002). Those training the teachers have to be very accommodating in terms of listening to the experiences of the teachers so that they are able to move them towards the objectives of the training. This adult learning idea can be a challenge for the trainers of trainers. As Guskey (2000) put it, sufficient flexibility in TPD must be allowed for contextual adaptations

### Recommendations

1. Indiscriminate TPD in relation to the use of ICT tools for all in-service teachers in Kenya.
2. An exploration of the impact of TPD on student achievements.

### CONCLUSION

The researchers concur that TPD has to be a continuous process for all in-service teachers in order to enhance teaching and learning possibilities that guarantee the change in the right direction within the education sector. When teachers get frequent training they are open to the use of modern ICT tools in their teaching environment since most professional development of teachers today will touch on ICT as a contemporary trend. Those teachers who are not frequently in-serviced are resistant to change and are likely to stick to their old teaching methodologies and tools.

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